REMARKS

In the Office Action mailed on October 3, 2007, the Examiner took the following action: (1) rejected claims 1-5 and 12-15 under 35 USC §103(a) as being unpatentable over Yoshino (US 3,703,422) in view of Irvine (US 3,334,383); and (2) rejected claims 6-11 and 16-19 under 35 USC §103(a) as being unpatentable over Yoshino and Irvine, and further in view of Mead (US 6,620,369). Applicants respectfully request reconsideration of the application in view of the foregoing amendments and the following remarks.

I. Interview Summary

A telephone interview was held between Examiner Matthew Daniels and attorneys of record Brett Halperin and Dale Barr on September 11, 2007. Proposed amendments to claim 1 were discussed in view of the relevant teachings of Waldrop (U.S. Application 2002/0022422), Mead (U.S. 6,620,369), and Irvine (U.S. 3,334,383) (cited by the Examiner over the telephone). It is believed that agreement was reached that the proposed amendments overcome the prior rejections under 35 U.S.C. §102(b), and that although agreement was not immediately reached regarding the pending rejections under 35 U.S.C. §103(a), the Examiner indicated a willingness to reconsider the Office's position in this regard following Applicants' formal submission of this response.

Applicants thank the Office and Examiner Daniels for his time and consideration in this regard, and for keeping a genuinely open mind regarding the merits of the subject application.

II. Rejections Under §103(a)

Claims 1-11

As amended, claim 1 recites:

> 1. A method of processing a composite component, comprising:
> providing a lay-up mandrel having a non-planar portion;
> forming a prepreg material on the non-planar portion;
> after forming the prepreg material on the lay-up portion, providing an elastomeric caul over the prepreg material in an initial position such that a first portion of the elastomeric caul is proximate the prepreg material on the lay-up mandrel, and a second portion of the elastomeric caul adjacent the first portion is spaced apart from the prepreg material *such that a void is formed between the second portion and the prepreg material, the second portion having a perimeter non-sealingly engaged with the lay-up mandrel*;
> providing a bagging film over the elastomeric caul;
> sealing the bagging film to the lay-up mandrel;
> applying a vacuum under the bagging film and thereby reducing a pressure between the elastomeric caul and the lay-up mandrel; and
> *stretching the elastomeric caul due to the pressure reduction* into a second position such that the second portion of the elastomeric caul is drawn *into substantially continuous engagement with at least one of the prepreg material and the lay-up mandrel.* (emphasis added).

Yoshino (U.S. 3703422)

Yoshino teaches a method of forming an assembly that includes a honeycomb panel with non-flammable face sheets. (1:45-50). According to Yoshino, a method includes: providing a release layer 15 on a mold 10 (:14-18); providing a frame 16 on the release layer 15 that surrounds a perimeter of the part to be formed (2:24-25; Fig. 2); providing a polyimide face sheet 17 formed of layers of prepreg on the release layer 15 within the frame 16 (2:29-32); providing an epoxy resin layer 18 on the release layer 15 within the frame 16 (2:41-42); providing a

honeycomb core 19 on the epoxy resin layer 18 (2:46-48); providing another epoxy resin layer 20 over the honeycomb 19 (2:48-50); providing another polyimide face sheet 21 over the resin layer 20 (2:48-51); forming another release layer 22 over the second face sheet 21 (2:51-53); installing a vacuum bag 11 over the frame 16 and assembly, and attaching the edges of the vacuum bag 11 to the mold 10 with "zinc chromate putty 23" to seal the vacuum bag 11 (59-61); and curing the assembly by applying vacuum and elevated temperature (2:68-3:10).

Applicants respectfully submit that Yoshino fails to disclose, teach, or fairly suggest the method recited in claim 1. Specifically, Yoshino fails to teach or suggest a method that includes in relevant part "providing an elastomeric caul over the prepreg material in an initial position such that a first portion of the elastomeric caul is proximate the prepreg material on the lay-up mandrel, and *a second portion of the elastomeric caul adjacent the first portion is spaced apart from the prepreg material such that a void is formed between the second portion and the prepreg material*" and "*the second portion having a perimeter non-sealingly engaged with the lay-up mandrel,*" and "*stretching the elastomeric caul due to the pressure reduction* into a second position such that the second portion of the elastomeric caul is drawn *into substantially continuous engagement with at least one of the prepreg material and the lay-up mandrel.*"

As noted above, Yoshino teaches the use of a frame 16 around the perimeter of the assembly being formed. The frame 16 occupies the space between the vacuum bag 11 and the prepreg material 17. Therefore, Yoshino fails to teach or fairly suggest "*a second portion of the elastomeric caul adjacent the first portion is spaced apart from the prepreg material such that a void is formed between the second portion and the prepreg material*" as recited in claim 1.

Furthermore, Yoshino teaches that the edges of the vacuum bag 11 are sealed to the mold 10 with zinc chromate putty 23. Therefore, Yoshino fails to teach or fairly suggest "*the second portion having a perimeter non-sealingly engaged with the lay-up mandrel*" as recited in claim 1.

Irvine (U.S. 3,334,383)

Irvine fails to remedy the above-noted deficiencies of Yoshino. Irvine teaches a molding apparatus having a stationary bottom 14 and a moveable top 20. (2:59-60). A plastic part 36 is positioned on the bottom 14, and a flexible diaphragm 38 is stretched over a pressure chamber 30 formed in the top 20. (2:66-72). In operation, as the top 20 is moved into engagement with the bottom 14, the diaphragm 38 is stretched onto the plastic part 36 by the downward movement of the top 20. (3:48-56). Once engaged, a vacuum is applied between the diaphragm 38 and the bottom 14 through a port 67, and the pressure chamber 30 is pressurized with steam to force the diaphragm 38 into engagement with the part 36, thereby curing the part 36. (4:15-30).

Applicants respectfully submit that Irvine, either singly or in combination with Yoshino, fails to disclose, teach, or fairly suggest the method recited in claim 1. Specifically, Irvine fails to teach or suggest a method that includes in relevant part "providing an elastomeric caul over the prepreg material in an initial position such that a first portion of the elastomeric caul is proximate the prepreg material on the lay-up mandrel, and *a second portion of the elastomeric caul adjacent the first portion is spaced apart from the prepreg material such that a void is formed between the second portion and the prepreg material,*" and "*stretching the elastomeric caul due to the pressure reduction* into a second position such that the second portion of the elastomeric caul is drawn *into substantially continuous engagement with at least one of the prepreg material and the lay-up mandrel.*" According to Irvine, the diaphragm 38 is stretched by mechanical movement of the top 20 relative to the bottom 14. Also, Irvine is silent as to positioning of the diaphragm 38 in a first position with a portion of the diaphragm 38 being spaced apart (*i.e.* bridged) from the plastic part. Therefore, claim 1 is allowable over the combined teachings of Irvine and Yoshino.

No Motivation to Combine

Applicants respectfully submit that it is improper to combine Mead with Yoshino or Irvine in the manner proposed by the Examiner due to the inconsistent teachings of these references.

As noted above, Yoshino and Irvine teach the use of flexible vacuum bags. On the other hand, Mead teaches a mold 10 having a recess 70 sized to conform to the conform to the dimensions of the desired composite part 30, such that "'damming materials' *such as rubber cauls* and tapes" are not needed. (4:64-5:3). (emphasis added).

Where a first reference (Yoshino and/or Irvine) teaches using vacuum bags, and a second reference (Mead) teaches that a desireable aspect is to eliminate such vacuum bags, there is no proper motivation to combine the teachings of such references. If a proposed combination of references would render the prior art being modified "unsatisfactory for its intended purposes, then there is no suggestion or motivation to make the proposed modification." M.P.E.P. §2143.01 (citations omitted). In this case, Applicants respectfully submit that there is no motivation to combine Mead with Yoshino and Irvine in the manner proposed by the Examiner.

Mead (U.S. 6,620,369)

Assuming arguendo that the teachings of Mead may be combined with those of Yoshino and Irvine in any properly motivated fashion, Applicants respectfully submit that Mead fails to remedy the above-noted deficiencies of Yoshino and Irvine. Specifically, Mead teaches a method of forming a resin composite part utilizing a mold surface for mitigating post-cure machining of the resin composite part. (2:29-32). Mead provides for forming a resin preform having a peripheral geometry similarly sized and configured as a configuration of the mold surface. (2:32-34). The resin preform is cured to form the resin composite part with the resin

composite part being confirmed to the configuration of the mold surface for mitigating post-cure machining of the resin composite part. (2:34-38).

Applicants respectfully submit that Mead, either singly or in combination with Yoshino and Irvine, fails to disclose, teach, or fairly suggest the method recited in claim 1. Specifically, Mead fails to teach or suggest a method that includes in relevant part "providing an elastomeric caul over the prepreg material in an initial position such that a first portion of the elastomeric caul is proximate the prepreg material on the lay-up mandrel, and *a second portion of the elastomeric caul adjacent the first portion is spaced apart from the prepreg material such that a void is formed between the second portion and the prepreg material*" and "*the second portion having a perimeter non-sealingly engaged with the lay-up mandrel,*" and "*stretching the elastomeric caul due to the pressure reduction* into a second position such that the second portion of the elastomeric caul is drawn *into substantially continuous engagement with at least one of the prepreg material and the lay-up mandrel.*" Mead is silent as to elastomeric cauls, bridging such elastomeric cauls, and stretching such elastomeric cauls, and therefore, claim 1 is allowable over the combined teachings of Mead, Yoshino, and Irvine.

For the foregoing reasons, claim 1 is allowable over the Cited References (Yoshino, Irvine, and Mead) either singly or in any properly motivated combination. Claims 2-11 depend from claim 1 and are allowable at least due to their dependencies on claim 1, and also due to additional limitations recited in those claims.

Claims 12-19

Similarly, claim 12 recites:

> 12. A method of manufacturing a component, comprising:
> forming a composite material on a non-planar portion of a mandrel;
> after forming the composite material on the lay-up mandrel, providing an elastomeric caul over the composite material in an initial position such that a first portion of the elastomeric caul is proximate the composite

material on the lay-up mandrel, and *a second portion of the elastomeric caul adjacent the first portion is spaced apart from the composite material such that a void is formed between the second portion and the prepreg material, the second portion having a perimeter non-sealingly engaged with the mandrel*;

providing a bagging film over the elastomeric caul;

sealing the bagging film to the lay-up mandrel;

applying a vacuum under the bagging film and thereby reducing a pressure between the elastomeric caul and the lay-up mandrel;

stretching the elastomeric caul due to the pressure reduction into a second position such that the second portion of the elastomeric caul is drawn proximate to at least one of the composite material and the lay-up mandrel; and

curing the composite material with the elastomeric caul stretched into the second position. (emphasis added).

Applicants respectfully submit that the Cited References (Yoshino, Irvine, and Mead), either singly or in any properly motivated combination, fail to disclose, teach, or fairly suggest the method recited in claim 12. Specifically, the Cited References fail to teach or suggest a method that includes in relevant part "providing an elastomeric caul over the prepreg material in an initial position such that a first portion of the elastomeric caul is proximate the composite material on the lay-up mandrel, and *a second portion of the elastomeric caul adjacent the first portion is spaced apart from the composite material such that a void is formed between the second portion and the prepreg material*" and "*the second portion having a perimeter non-sealingly engaged with the lay-up mandrel*," and "*stretching the elastomeric caul due to the pressure reduction* into a second position such that the second portion of the elastomeric caul is drawn *into substantially continuous engagement with at least one of the composite material and the lay-up mandrel.*"

As noted above, Yoshino teaches the use of a frame 16 around the perimeter of the assembly being formed. The frame 16 occupies the space between the vacuum bag 11 and the prepreg material 17. Therefore, Yoshino fails to teach or fairly suggest "*a second portion of the*

elastomeric caul adjacent the first portion is spaced apart from the prepreg material such that a void is formed between the second portion and the prepreg material" as recited in claim 1.

Furthermore, Yoshino teaches that the edges of the vacuum bag 11 are sealed to the mold 10 with zinc chromate putty 23. Therefore, Yoshino fails to teach or fairly suggest "*the second portion having a perimeter non-sealingly engaged with the lay-up mandrel*" as recited in claim 1.

According to Irvine, the diaphragm 38 is stretched by mechanical movement of the top 20 relative to the bottom 14. Also, Irvine is silent as to positioning of the diaphragm 38 in a first position with a portion of the diaphragm 38 being spaced apart (*i.e.* bridged) from the plastic part. Similarly, Mead is silent as to elastomeric cauls, bridging such elastomeric cauls, and stretching such elastomeric cauls.

Therefore, claim 12 is allowable over the Cited References. Claims 13-19 depend from claim 12 and are allowable at least due to their dependencies on claim 12, and also due to additional limitations recited in those claims.

CONCLUSION

Applicants respectfully submit that pending claims 1-19 are now in condition for allowance. If there are any remaining matters that may be handled by telephone conference, the Examiner is kindly invited to contact the undersigned attorney at the telephone number listed below.

Respectfully Submitted,

Dated: Nov. 20, 2007

By: _____

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